

Claims

1. (currently amended) A method for registering an image with a 3D physical object, comprising:

acquiring a 3D graphics model of the 3D physical object;

identifying a plurality of 3D calibration points on a surface of the object and corresponding 3D model calibration points in the 3D graphics model;

illuminating the 3D physical object with a calibration image using a projector at a fixed location with respect to the 3D physical object, the calibration image including a plurality of pixels;

aligning the calibration image with each of the 3D calibration points on the surface of the 3D physical object to identify corresponding 2D calibration pixels in the calibration image; and

determining a transformation between the 2D calibration pixels and the corresponding 3D calibration points of ~~the~~ the model to register the projector with the 3D physical object.

2. (original) The method of claim 1 further comprising:

rendering the 3D graphics model using the transformation to generate an image; and

illuminating the 3D physical object with the image using the projector at the fixed location.

3. (original) The method of claim 1 including at least six 3D calibration points.

4. (original) The method of claim 1 wherein the transformation includes a projector transformation matrix and a viewer transformation matrix.

5. (original) The method of claim 1 wherein the calibration image includes a cross-hair, and further comprising:

aligning the cross-hair with the 3D calibration points using an input device couple to the projector.

6. (currently amended) The method of claim 1 further comprising:

illuminating the 3D physical object with a plurality of calibration images using a plurality of projectors at a plurality of corresponding fixed locations;

aligning each calibration image with each of the 3D calibration points on the surface of the 3D physical object to identify corresponding 2D pixels in each calibration image;

determining a transformation between the 2D calibration pixels of each image and the corresponding 3D model calibration points to register each projector with the 3D physical object.

7. (original) The method of claim 6 further comprising:

rendering the 3D graphics model using each transformation to generate a plurality of images; and

illuminating the 3D physical object with the image in parallel using the plurality of projector at the plurality of fixed location.